3.C.4.e (3) Testing. Within these requirements, there are three possible ways for a manufacturer to certify that their valve is suitable for use as a Positive shutoff or Category A valve:

Pressure testing. The manufacturer must perform this test by removing all of the resilient material at testing full rated pressure and meet the flow requirements of 46CFR56.20-15 for either Positive shutoff or Category A as desired;

Calculation. Manufacturers may also demonstrate compliance through a method of calculation that is acceptable to Commandant (G-MSE-3) and are not limited to any particular calculation method to support their request for certification but are free to propose a method. For example, one method may be to use liquid capacity test data for valves of one size (with the resilient material removed) from a valve series to develop the flow coefficient for that valve size and then, following principles of dimensional similitude, scale up the flow coefficient for a valve of a different size (with the resilient material removed) within that same valve series. The liquid capacity test data could be obtained by maintaining constant pressure at the inlet side of the valve (with the resilient material removed) while adjusting pressure at the outlet side of the valve, then measuring the flow rate. Having calculated the flow coefficients for other valve sizes within the same valve series from the flow coefficient that was empirically derived from the liquid capacity test data, the flow rates for the other valves in the sizes within that valve series can then be calculated.

Fire testing. If a valve designer elects to use actual fire, Commandant (G-MSE-3) must accept the proposed calculation method or test plan, however the regulations do not specify any particular fire test that must be used. Some fire tests that may be acceptable include American Petroleum Institute (API) standard 607 "Fire Test for Soft Seated Quarter Turn Valves," 4th Edition; API specification 6FA "Specification for Fire Test Valves", 2nd Edition; or Factory Mutual Class 7440 that includes a cycling component in a fire test.

However, such tests would require that the valve be pressure tested at a pressure at least equal to the system pressure in which the valve would be utilized. Manufacturers are free to propose other fire tests to Commandant (G-MSE-3) for consideration in lieu of those mentioned above.

3.D. Vessel Inspection Alternatives.

1. References. Vessel inspection alternatives are discussed in Title 46, Code of Federal Regulations, Part 8. Additional information regarding the Alternate Compliance Program (ACP) is contained in the Marine Safety Manual, Volume II, Materiel Inspection, COMDTINST M16000.7 (series), Section B, Chapter 9. Additional information regarding the Streamlined Inspection Program (SIP) is contained in the Marine Safety Manual, Volume II, Materiel Inspection, COMDTINST M16000.7 (series), Section B, Chapter 10.